Indiana University
Advanced Research
& Technology Institute

CONFIDENTIAL

DATE: November 9, 1999

TO: Donald L. Durden, M.D., Ph.D.
Pediatrics

FROM: Ronald D. Henriksen, President RDH
Advanced Research & Technology Institute

RE: Disclosure of Invention

Thank you for submitting the Invention Disclosure, ***Gene Therapy Replacement of PTEN for Treatment of Malignant Tumors: A Model for Brain Tumor Gene Therapy (0024)***, to the Office of Technology Transfer.

As you know, the goal of the University's technology transfer program is to transfer university discoveries to the commercial sector for maximum public benefit. To achieve this goal, we need your active participation. As the creator, you play a vital role in the transfer process.

Tony Armstrong, project manager for your disclosure and associate director of technology transfer, will contact you to schedule a meeting to discuss your invention in greater detail and to enlist your assistance as we work through a series of analyses to help us evaluate the potential for protecting and transferring your discovery for commercialization.

You will soon be hearing from Tony, however, he can be reached at 4-5905 or by email at *atarmstr@indiana.edu* . We appreciate the opportunity to collaborate with you on this project.

cc: Gerald Bepko, Chancellor and Vice President
Robert W. Holden, M.D., Dean, School of Medicine
Richard L. Schreiner, M.D., Chairman, Department of Pediatrics
Anthony T. Armstrong, Associate Director, Technology Transfer

1000 Waterway Boulevard
Indianapolis, Indiana 46202
317/278-1901 Fax: 317/278-1902

Office of the President

0024

CERTIFICATION PAGE

Title of Invention:

Gene Therapy Replacement of PTEN for Treatment of Mailgnant Tumors: A Model for Brain Tumor Gene Therapy

Inventor(s):

D Durden 11-3-99

Signature Date

Donald L. Durden MD, PhD, Associate Professor Pediatrics & Biochemistry USA

Printed Name and Title in Full Citizenship

Pediatrics, IUPUI

University Department and Campus

317-278-3718 317-297-9521

University Phone Home Phone

8820 Woodacre Lane Marion County, Indianapolis, IN 46234

Home Address (include county of residence)

Signature Date

Printed Name and Title in Full Citizenship

University Department and Campus

University Phone Home Phone

Home Address (include county of residence)

Signature Date

Printed Name and Title in Full Citizenship

University Department and Campus

University Phone Home Phone

Home Address (include county of residence)

Witness(es):

I certify that the invention has been explained to and is understood by me.

Anthony T. Armstrong 11/9/99 Anthony T. Armstrong

Printed Name in Full Date Signature

8550 Chapel Glen Dr. (317)274-5905

Home Address Home Phone Business Phone

Printed Name in Full Date Signature

Home Address Home Phone Business Phone

INVENTION DESCRIPTION

(Attach additional sheets as necessary.)

1. Describe the particular problem the invention seeks to solve.

To provide a way to reverse malignant or cancerous phenotype by gene replacement.

2. Describe previous attempts to solve the problem and the limitations or deficiencies your invention overcomes in the state of the art.

Developed an orthotopic model for introduction of genes into human brain tumor cells. Proof that PTEN controls tumor growth and angiogenesis in this model.

3. Please attach a complete description of the invention *(the detail should be similar to that of the methods and results sections of a publication)*. This description may be by reference to a separate document *(copy of a report, preprint, grant application, or the like)*. If so, give a brief summary below and attach the document to this disclosure.

We have transfered a gene (PTEN) into brain tumor cells and found that this prevents growth of the tumor.

4. Describe the novel features of your invention and why they are significant.

PTEN is causative in significant percentage of human cancer. This data is first evidence that PTEN gene replacement can regulate brain tumor growth.

5. Describe the state of development *(prototype, animal model, other research results)*.

We have an orthotopic brain tumor model.

6. Are there other contemplated forms of the invention or alternate aspects and uses?

Use the orthotopic model to treat other potential brain tumor therapies.

ERTIFICATION

I, Donald L. Durden, hereby certify that the invention entitled Orthotopic gene therapy replacement of PTEN, patent application no. _____, was made by me on October 15, 19 99, while I was employed at the ~~VA Medical Center~~ Indiana University School of Medicine, _____, while employed as (Title of Position): Associate Professor. The other inventor(s) were: N/A.

The invention was made:

1. During official working hours: Yes X No ____

2. With a contribution by the VA of:
   - (a) Facilities: Yes ____ No ____
   - (b) Equipment: Yes ____ No ____
   - (c) Materials: Yes ____ No ____
   - (d) Funds: Yes ____ No ____
   - (e) Information: Yes ____ No ____
   - (f) My time or services while on official duty: Yes ____ No ____
   - (g) Time or services of other VA employees on office duty: Yes ____ No ____

3. The invention:
   - (a) Bears a direct relation to my official duties: Yes X No ____
   - (b) Was made in consequence of my official duties: Yes X No ____

4. I am attaching remarks relating to the above: Yes ____ No ____

Signatures: N/A
(Immediate supervisor)

Signature: _____
(Inventor)

Present Title: Associate Professor Pediatrics & Biochemistry

Home Address: 8820 Woodacre Lane
Indianapolis, IN 46234